REMARKS/ARGUMENTS

This Amendment is in response to the Office Action mailed October 10, 2006. Claims 1-8 and 11-22 were pending in the present application. Claims 1-3, 5, and 7 have been amended. No claims have been canceled or added. Accordingly, claims 1-8 and 11-22 remain pending in the present application after entry of this Amendment. Reconsideration of the rejected claims is respectfully requested.

English Translation of JAPAN 2003-011594

An English translation of foreign application JAPAN 2003-011594 was requested. In a telephone conversation with the Examiner, the Examiner indicated that a translation is no longer required.

Objections to the Drawings

The drawings were objected to because element 118 of Figs. 7 and 8 and elements 714 and 715 of Fig. 11 were not described in the specification.

The specification has been amended to reference the element numbers listed above. Applicants submit that no new matter has been introduced by virtue of these amendments. As such, the objections are believed to be overcome.

Objections to the Specification

The specification was objected to for various informalities. The specification has been amended accordingly. As such, the objections are believed to be overcome.

Provisional Double Patenting Rejections of Claims 1 and 2

Claims 1 and 2 were provisionally rejected on the ground of non-statutory obviousness type double patenting as being unpatentable over claims 1, 7, 11, and 17 of co-pending Application No. 10/757,957; claims 1, 3-5, 7, 10, 11, 13-15, 17, and 20 of co-pending

Application No. 11/350,484; claims 1, 3-5, 7, 10, 11, 13-15, 17, and 20 of co-pending Application No. 11/010,172; and claims 1, 7, and 10 of U.S. Patent No. 6,990,553.

A provisional and non-provisional terminal disclaimer are filed herewith. Thus, the non-statutory double patenting rejections are believed to be overcome.

35 U.S.C. § 112 Rejections of Claims 14-17

Claims 14-17 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner asserted that the terms "microprogram" (as recited in claims 14 and 15), "loader" (as recited in claim 16), and "installer" (as recited in claim 16) are not mentioned in the specification.

Kindly refer to page 36, line 24 - page 37, line 6 of the specification as filed, where the specification discloses the above terms:

> Micro-programs 770, a loader 771, an installer 772, and an OS 773 are stored in the managing terminal 160. These programs are stored in the memory 162 and storage unit 168 of the managing terminal 160. One of the micro-programs 770 is written into NVRAMs 115 of CHNs 110, and the other is written into NVRAMs 144 of the disk controllers 140. The former is a program for controlling I/O processors 119 of CHNs 110. The latter is a program for controlling CPUs 142 of the disk controllers 140. The loader 771 and the installer 772 are programs used for CHNs 110 to read in the OS 773 stored in the managing terminal 160. (Emphasis added)

As such, Applicants respectfully request that the rejections with respect to these claims be withdrawn.

35 U.S.C. 102(e) Rejections of Claims 1-5, 7, 18, 20, and 22

Claims 1-5, 7, 18, 20, and 22 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Publication No. 2002/0133814 to Bourke-Dunphy et al. (hereinafter "Bourke-Dunphy"). The rejections are overcome as follows.

Embodiments of the present invention are directed to techniques for installing software on a channel controller of a storage device controlling apparatus. As described in the specification, a storage device controlling apparatus manages access to the storage devices of a storage system. Page 7, lines 2-5.

Fig. 1 illustrates an exemplary storage device controlling apparatus 100, which includes a plurality of channel controllers 110 and a plurality of disk controllers 140. The channel controllers accept file I/O requests from information processing apparatuses (*e.g.*, computer systems) 200 and route the requests to appropriate disk controllers. As shown, a channel controller 110 may be connected to a Local Area Network 400 (and thus provide a Network Attached Storage ("NAS") service) or a Storage Area network 500 (and thus provide a Storage Area Network ("SAN") service). Page 8, line 15 - page 10, line 18. Software is installed on each channel controller (or a storage device accessible to the channel controller) to enable its NAS or SAN service functionality. Page 4, lines 14-17.

According to one set of embodiments, a first type of software (such as firmware) is installed via a high-speed network 151 directly onto a non-volatile memory section of a channel controller. Network 151 is internal to the storage device controlling apparatus. According to another set of embodiments, a second type of software (such as an operating system) is installed via network 151 onto a system partition of a storage device accessible to a channel controller. Page 36, line 17 - page 37, line 11.

In accordance with the above, independent claim 1 recites:

> A method of installing software on a storage device controlling apparatus, said method comprising:
>
> writing software for enabling a file access processing section of a channel controller of the storage device controlling apparatus to function,
>
> wherein said storage device controlling apparatus comprises:
>
> a plurality of channel controllers, each having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a first network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device;
>
> a plurality of disk controllers executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processor; and
>
> a second network coupling said plurality of channel controllers and said plurality of disk controllers so as to be able to communicate with each other,
>
> wherein said software is written into said storage device by communicating with said channel controller via said second network. (Emphasis added)

Independent claim 2 recites:

> A method of installing software on a storage device controlling apparatus, said method comprising:
>
> writing a piece of firmware into each of nonvolatile memories provided for a channel controller and a disk controller of the storage device controlling apparatus,
>
> wherein said storage device controlling apparatus comprises:
>
> a plurality of channel controllers, each having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a first network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device I/O;
>
> a plurality of disk controllers executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processor; and
>
> a second network coupling said plurality of channel controllers and said plurality of disk controllers so as to be able to communicate with each other,
>
> wherein said piece of firmware is written via said second network. (Emphasis added)

Applicants respectfully submit that Bourke-Dunphy fails to disclose any of the limitations of the above claimed embodiments. Bourke-Dunphy is directed to a system for planning the installation of application software components on general-purpose computers. As best understood, Bourke-Dunphy discloses a user interface (Figs. 4-6) in which a user can specify the type and order of software components to install. Once a list of components is specified, the list is analyzed to identify dependency requirements or conflicts between the components. Any such requirements or conflicts are reported to the user prior to installation.

As can be seen, Bourke-Dunphy is completely unrelated to the embodiments recited in claims 1 or 2. Bourke-Dunphy pertains to the installation of application-level software on a general-purpose computer. Bourke-Dunphy is totally silent as to the specifically recited idea of installing file-access enabling software on a channel or disk controller of a storage device controlling apparatus. Thus, Bourke-Dunphy fails to disclose or even suggest "writing software for enabling a channel controller of a storage device controlling apparatus to function... wherein said storage device controlling apparatus comprises a plurality of channel controllers,... a plurality of disk controllers,... [and] a second network coupling said plurality of channel controllers and disk controllers" as recited in claim 1. Similarly, Bourke-Dunphy fails to disclose or even suggest "writing a piece of firmware into each of nonvolatile memories

provided for a channel controller and a disk controller of a storage device controlling apparatus to function... wherein said storage device controlling apparatus comprises a plurality of channel controllers,... a plurality of disk controllers,... [and] a second network coupling said plurality of channel controllers and disk controllers" as recited in claim 2.

In the Office Action, it was asserted that the channel controller of the present invention is disclosed by the processing unit 304 shown in Fig. 7 of Bourke-Dunphy. Applicants respectfully disagree. The processing unit 304 is merely a general-purpose processor for a computing device (commonly referred to as a "CPU"). In contrast, a channel controller is a well-known, specialized component used to control access to a specific piece of equipment, namely, a storage device. Thus, one of ordinary skill in the art would not consider the processing unit of Bourke-Dunphy to teach or suggest the recited channel controller for a storage device controlling apparatus.

For at least the reasons above, Applicants respectfully submit that claims 1 and 2 are allowable over Bourke-Dunphy and therefore the rejections should be withdrawn.

Claims 3-5, 7, 18, 20, and 22 depend from claims 1 and 2 and are thus allowable for substantially the same reasons as claims 1 and 2, as well as for the additional limitations they recite.

35 U.S.C. § 103(a) Rejections of Claims 6, 8, 11, and 13

Claims 6, 8, 11, and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bourke-Dunphy in view of U.S. Publication No. 2003/0023665 to Matsunami et al. (hereinafter "Matsunami").

As explained above, Bourke-Dunphy fails to disclose all of the limitations of independent claims 1 and 2. The deficiencies of Bourke-Dunphy are not remedied by Matsunami.

Thus, claims 6, 8, 11, and 13, which depend from claims 1 and 2, are allowable for substantially the same reasons as claims 1 and 2, as well as for the additional limitations they recite.

35 U.S.C. § 103(a) Rejection of Claim 12

Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bourke-Dunphy in view of U.S. Publication No. 2002/0188733 to Collins et al. (hereinafter "Collins").

As explained above, Bourke-Dunphy fails to disclose all of the limitations of independent claims 1 and 2. The deficiencies of Bourke-Dunphy are not remedied by Collins.

Thus, claim 12, which depends from claim 1, is allowable for substantially the same reasons as claim 1, as well as for the additional limitations it recites.

35 U.S.C. § 103(a) Rejections of Claims 14 and 15

Claims 14 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourke-Dunphy in view of U.S. Patent No. 5,367,686 to Fisher et al. (hereinafter "Fisher").

As explained above, Bourke-Dunphy fails to disclose all of the limitations of independent claims 1 and 2. The deficiencies of Bourke-Dunphy are not remedied by Fisher.

Thus, claims 14 and 15, which depend from claim 2, are allowable for substantially the same reasons as claim 2, as well as for the additional limitations they recite.

35 U.S.C. § 103(a) Rejection of Claim 16

Claim 16 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bourke-Dunphy in view of U.S. Publication No. 2004/0088697 to Schwartz et al. (hereinafter "Schwartz").

As explained above, Bourke-Dunphy fails to disclose all of the limitations of independent claims 1 and 2. The deficiencies of Bourke-Dunphy are not remedied by Schwartz.

Thus, claim 16, which depends from claim 2, is allowable for substantially the same reasons as claim 2, as well as for the additional limitations it recites.

35 U.S.C. § 103(a) Rejection of Claim 17

Claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bourke-Dunphy in view of Schwartz as applied to claim 16 and further in view of U.S. Publication No. 2005/0229154 to Hiew et al. (hereinafter "Hiew").

As explained above, Bourke-Dunphy fails to disclose all of the limitations of independent claims 1 and 2. The deficiencies of Bourke-Dunphy are not remedied by Schwartz and/or Hiew.

Thus, claim 17, which depends from claim 2, is allowable for substantially the same reasons as claim 2, as well as for the additional limitations it recites.

35 U.S.C. § 103(a) Rejections of Claims 19 and 21

Claims 19 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bourke-Dunphy in view of U.S. Patent No. 6,665,703 to Shatil et al. (hereinafter "Shatil").

As explained above, Bourke-Dunphy fails to disclose all of the limitations of independent claims 1 and 2. The deficiencies of Bourke-Dunphy are not remedied by Shatil.

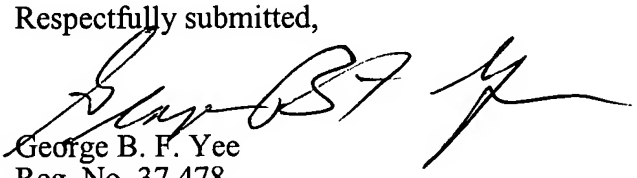
Thus, claims 19 and 21, which depend from claims 1 and 2, are allowable for substantially the same reasons as claims 1 and 2, as well as for the additional limitations they recite.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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